

What is claimed is:

1. A vehicle drive assist system comprising:
a camera for picking up an image of an area existing in an advancing direction of a vehicle;
display means for displaying the image picked up by the camera;
steering angle detecting means for detecting a steering angle for steering the vehicle;
traveling path predicting means for predicting a traveling path of the vehicle on the basis of the steering angle detected by the steering angle detecting means; and
drive assist means for overlaying on the display means drive assist information containing the vehicle predictive traveling path predicted by the traveling path predicting means and guide lines prolonged from the lines defining the width of the vehicle body on the image of the area existing in the vehicle advancing direction.
2. The vehicle drive assist device according to claim 1, wherein the drive assist means selects a display of the predictive traveling path and/or guide lines.
3. The vehicle drive assist device according to claim 2, wherein the drive assist means varies a brightness of the display of the predictive traveling path and/or guide lines in accordance with a brightness of the environment.

4. The vehicle drive assist device according to claim 2, wherein the drive assist means varies a color arrangement of a display of the predictive traveling path and/or guide lines in accordance with a color arrangement of the environment.

5. The vehicle drive assist device according to claim 2, wherein the vehicle includes a brightness sensor for sensing a brightness of the environment to select an illumination system, and the drive assist means varies a brightness or a color arrangement of a display of the predictive traveling path and/or guide lines in accordance with a brightness sensed by the brightness sensor.

6. The vehicle drive assist device according to claim 2, wherein the drive assist means varies a color arrangement of a display of the predictive traveling path and/or guide lines in accordance with a background color of an image picked up by the camera.

7. The vehicle drive assist device according to claim 2, wherein the drive assist means comprising:

parking drive judging means for judging whether or not the drive of the vehicle is a parking drive;

parking end judging means for judging whether or not the parking drive ends, when the parking drive judging means judges

that the vehicle drive is the parking drive;

storing means for storing a select condition for displaying the predictive traveling path and/or guide lines, when the parking end judging means judges that the parking drive ends; and

select means, when the parking drive judging means judges that the vehicle drive is a parking drive, for selecting a display condition of the drive assist information in accordance with the contents of the storing means.

8. The vehicle drive assist device according to claim 1, wherein the camera picks up an image by a wide angle field, and the drive assist means displays the guide lines curved in accordance with a distortion of the wide angle image picked up by the camera.

9. The vehicle drive assist device according to claim 1, wherein the drive assist means displays the predictive traveling path and/or guide lines except the portions thereof near the vehicle.

10. The vehicle drive assist device according to claim 1, wherein the drive assist means displays the predictive traveling path and/or guide lines such that the portions thereof near the vehicle are broadened.

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11. The vehicle drive assist device according to claim 1, wherein the drive assist means displays a line indicative of a stop position of the vehicle at a position on the predictive traveling path and/or guide lines, where the line is located near the vehicle.

12. The vehicle drive assist device according to claim 1, wherein the drive assist means displays the guide lines when braking is effected.

13. The vehicle drive assist device according to claim 1, wherein the drive assist means displays the guide lines in the form of dotted lines.

14. The vehicle drive assist device according to claim 1, further comprising:

an obstacle sensor for detecting presence or absence of an obstructive object on a vehicle traveling path,

wherein the drive assist varies a length of the guide lines in accordance with a distance ranging to an obstructive object detected by the obstacle sensor.

15. The vehicle drive assist device according to claim 1, wherein the drive assist means displays the guide lines in a state that the width of the guide lines is wider than the width of the vehicle.

16. A vehicle drive assist system comprising;

a camera for picking up an image of an area existing in the advancing direction of a vehicle;

display means for displaying the image picked up by the camera;

reverse gear mode detecting means for detecting as to whether or not a transmission of the vehicle is set to a reverse gear mode; and

drive assist means, when the reverse gear mode detecting means judges that the transmission is set to the reverse gear mode, for changing a display by the display means and informing a driver that the transmission is in a reverse gear mode, thereby effecting the drive assist.

17. A vehicle drive assist system comprising;

a camera for picking up an image of an area existing in an advancing direction of a vehicle;

display means for displaying the image picked up by the camera;

an obstacle sensor for detecting presence or absence of an obstructive object in a backward area of the vehicle;

drive assist means, when an obstructive object is detected by the obstacle sensor, informing a driver of presence of an obstructive object by changing a display by the display means.

18. The vehicle drive assist device according to claim 16, wherein the drive assist means displays information in the form of character telop for the drive assist.

19. The vehicle drive assist device according to claim 16, wherein the drive assist means displays information in the form of a color change of the entire display.

~~20.~~ A vehicle drive assist system comprising;
a camera for picking up an image of an area existing in an advancing direction of a vehicle;

display means for displaying the image picked up by the camera;

drive assist means for detecting a drive condition and judging whether or not the drive mode is a parking drive mode, the drive assist means, when the drive mode is a parking drive mode, for causing the display means to display the image picked up by the camera and an image for parking drive assist; and

safety check means for displaying on the image for the parking drive assist a telop to urge a driver to make a safety check.

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21. A vehicle parking assist device comprising:
a camera for picking up an image of a backward area of a vehicle;

display means for displaying the image picked up by the

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camera;

obstacle sensor for detecting presence or absence of an obstacle in the backward area of the vehicle;

drive assist means for detecting a drive condition and checking if the vehicle backs for parking, the drive assist means, when the vehicle backs, for displaying drive assist information for parking; and

safety check means for checking the parking drive ends on the basis of the result of the obstacle detection by the obstacle sensor, and when the parking drive ends, the safety check means for causing the display means to display the end of the parking drive.

22. A vehicle parking assist device comprising:

a camera for picking up an image of a backward area of a vehicle;

display means for displaying the image picked up by the camera;

reverse gear mode detecting means for judging whether transmission of the vehicle is set to a reverse gear mode; and

drive assist means, when the reverse gear mode detecting means judges that the transmission is set to the reverse gear mode, for limiting a speed of the vehicle to a preset upper limit value or lower, thereby effecting the drive assist.

23. A vehicle parking assist device comprising:

a camera for picking up an image of a backward area of a vehicle;

display means for displaying the image picked up by the camera;

obstacle sensor for sensing presence or absence of an obstacle in a backward area of the vehicle; and

drive assist means, when the obstacle sensor detects the obstacle, for limiting a speed of the vehicle to a preset upper limit value or lower, thereby effecting the drive assist.

24. The vehicle parking assist device comprising:

a camera for picking up an image of a backward area of a vehicle;

display means for displaying the image picked up by the camera;

reverse gear mode detecting means for judging transmission of the vehicle is set to a reverse gear mode; and

drive assist means, when the reverse gear mode detecting means judges that the transmission is set to the reverse gear mode, for changing an illumination direction of a lamp illuminating the backward area of the vehicle, thereby effecting the drive assist.

25. The vehicle drive assist device according to claim 24, wherein the lamp is optionally installed.

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26. The vehicle drive assist device according to claim 1, the vehicle drive assist device mounted in the vehicle having a car-carried device including a navigation device and/or audio device, the vehicle drive assist device further comprising:

select means for causing the display means to selectively display the image from the camera and the image from the drive assist means or an image from the car-carried device.

27. A vehicle parking assist device comprising:
a camera for picking up an image of an area existing in a vehicle;

display means for displaying the image picked up by the camera; and

drive assist means for switching drive assist information for parking overlaid on the image displayed by the display means between the drive assist information of a normal parking mode and that of a series parking mode.

28. The vehicle drive assist device according to claim 27, wherein the drive assist means selects the drive assist information of a series parking mode when the turning on of a winker lamp or a hazard lamp and the shifting of the transmission to the reverse gear mode are simultaneously performed.

29. The vehicle drive assist device according to claim 27, the vehicle drive assist device mounted in the vehicle

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having a navigation device,

wherein the drive assist means for judging whether a parking position in which the vehicle is to be parked is in a parking lot or on a road on the basis of the present position of the vehicle derived from the navigation device, and the drive assist means for selecting the drive assist information of the normal parking mode when the parking position is in the parking lot, the drive assist means for selecting the drive assist information of the series parking mode when the parking position is on the road.

30. The vehicle drive assist device according to claim 27, wherein the drive assist means for selecting the drive assist information of the normal parking mode or the series parking mode in accordance with a change of a steering angle for steering the vehicle.

~~31.~~ A vehicle parking assist device comprising:
a plurality of cameras to cover different photographing areas from each other, thereby to pick up a scene around the vehicle;

display means for displaying images picked up by the cameras, the display means having a display screen; and

drive assist means for dividing the display screen of the display means into a plurality of display areas, and displaying the images by the plurality of cameras on the display areas

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divided, thereby effecting a drive assist.

32. The vehicle drive assist device according to claim 31, further comprising:

drive condition detecting means for detecting a vehicle drive condition,

wherein the drive assist means selectively changes a display in accordance with the vehicle drive condition detected by the drive condition detecting means.

33. The vehicle drive assist device according to claim 31, wherein the drive assist means overlays the vehicle in simplified form on the images picked up by the plurality of cameras and displayed on the screen of the display means.

34. The vehicle drive assist device according to claim 31, wherein the drive assist means moves a display position of the vehicle on the display screen according to an image from the camera.

35. The vehicle drive assist device according to claim 33, wherein the drive assist means operates to display directions and photographing areas covered by the cameras when the vehicle is displayed in simplified form.

36. The vehicle drive assist device according to claim

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31, the vehicle drive assist device mounted in the vehicle having a car-carried device including a navigation device and/or audio device,

wherein the drive assist means for dividing the display screen of the display means into a plurality of segmental display areas, and the images from the plurality of cameras and an image from the car-carried device are displayed on the segmental display areas, thereby effecting the drive assist.

37. The vehicle drive assist device according to claim 31, wherein the drive assist means changes the images from the plurality of cameras to be displayed on the display screen at a predetermined time interval.

38. The vehicle drive assist device according to claim 37, wherein the drive assist means uses a wipe to change the images.

39. The vehicle drive assist device according to claim 31, wherein one of the plurality of cameras is for picking up a scene of a side area of the vehicle, and the drive assist means operates to display a side image concerning a direction indicator, being interconnected with an operation of the direction indicator.

40. The vehicle drive assist device according to claim

31, wherein the drive assist means changes the images one to another in accordance with a steering angle of turn of a steering wheel for steering the vehicle.

41. The vehicle drive assist device according to claim 40, wherein the drive assist means changes a condition of dividing the screen of the display means in accordance with a steering angle of the steering wheel.

42. The vehicle drive assist device according to claim 31, further comprising an obstacle sensor for detecting presence or absence of an obstacle on a vehicle traveling path, wherein when the obstacle sensor detects the obstacle, the drive assist means causes the display means to display a sensing direction of the obstacle sensor.

43. The vehicle drive assist device according to claim 42, wherein when the obstacle sensor detects an obstacle, the drive assist means causes the display means to display an image from the camera picking up a sensing direction of the obstacle sensor.

44. The vehicle drive assist device according to claim 42, wherein when the obstacle sensor detects the obstacle, the drive assist means causes the display means to shift a display position of the image from the camera picking up the sensing

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direction of the obstacle sensor, to the center of the screen of the display means or to expand the display.

45. The vehicle drive assist device according to claim 42, wherein the drive assist means causes the display means to overlay an alarm on a display of the sensing direction of the obstacle sensor.

46. The vehicle drive assist device according to claims 31, wherein when adjacent images of the cameras adjacently disposed are simultaneously displayed, the drive assist means adjusts the display areas and positions of the adjacent images to connect the adjacent images continuously with each other.

47. The vehicle drive assist device according to claim 31, wherein the plurality of cameras are disposed to take scenes of the front, front left, front right, back or rear left and back or rear right areas of the vehicle.

48. The vehicle drive assist device according to claim 47, wherein the drive assist means divides the display screen of the display means into upper and lower display areas, and causes the display means to display an image in front of the vehicle on the central region of the upper portion of the screen, images of front left and front right images on the left and right display areas of the upper display area, and an image of the

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rear area of the vehicle on the central area of the lower display area of the display screen, images of the rear left and rear right on the left and right display areas of the lower display area of the display screen of the display means.

49. The vehicle drive assist device according to claim 47, wherein the drive assist means causes the display means to display an image selected from the images picked up by the plurality of cameras.

50. The vehicle drive assist device according to claim 47, wherein the drive assist means causes the display means to display the images output from the plurality of cameras having the photographing areas successively in scrolling manner.

51. The vehicle drive assist device according to claim 31, wherein the display means includes a touch panel, and the drive assist means changes an image display condition according to an input to the touch panel.

52. The vehicle drive assist device according to claim 51, wherein according to the input to the touch panel, the drive assist means enlarges and displays an image at an input position at a predetermined time, and after the predetermined time elapses, the drive assist means put back the image enlarged and displays the image on the display screen.

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~~53.~~ A vehicle parking assist device comprising:
a camera for picking up an image in a frontward area of
a vehicle;

storing means for reading and string the image picked up
by the camera; and

drive assist means for acquiring information for a
vehicle drive assist on the basis of the image stored in the
storing means.

54. The vehicle drive assist device according to claim
53, further comprising display means for displaying the image
from the camera.

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~~55.~~ A vehicle drive assist device according to claim
53, further comprising vehicle detecting means for detecting
an other vehicle forcibly running into a place in front of the
vehicle by processing the image from the camera.

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~~56.~~ A vehicle parking assist device comprising:
a camera attached to the top of a vehicle, the camera
for picking up an image around the vehicle as viewed from the
top of the vehicle;

display means for displaying the image picked up by the
camera; and

drive assist means for detecting a limit of a vehicle

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height from the image picked up by the camera, and informing a driver of the detection result as drive assist information.

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A vehicle parking assist device comprising:

a camera for picking up an image in frontward and backward areas of a vehicle;

display means for displaying an image picked up by the camera;

running condition detecting means for detecting running condition of the vehicle; and

drive assist means for carrying out drive assist in accordance with running conditions detected by the running condition detecting means in such a manner that in a normal running, the display means displays an image of the frontward area of the vehicle, and in a backward running, the display means displays more brightly an image of the backward area than an image of the forward area.

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A vehicle parking assist device comprising:

a camera for picking up an image in the frontward and backward areas of a vehicle;

display means for displaying the image picked up by the camera;

running condition detecting means for detecting running condition of the vehicle; and

drive assist means for carrying out drive assist in

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accordance with running conditions detected by the running state detecting means by use of such a display that in a normal running, the display means displays an image of the frontward area of the vehicle, and in a backward running, the display means displays more brightly an image of the backward area than an image of the forward area, in place of a display frame for back mirrors.

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51 58. The vehicle drive assist device according to claim 58, wherein the drive assist means modifies a backward area image displayed in the display frame for the back mirrors into an image having a field angle equal to that of the back mirror, and causes the display means to display the image modified in field angle.

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59. A vehicle drive assist device comprising:
a camera mounted on a vehicle, the camera for picking up an image of an area existing in an advancing direction of the vehicle;

a steering angle sensor for detecting a steering angle of the steering wheel of the vehicle;

traveling path predicting means for calculating a predictive traveling path curve depending on a steering angle detected by the steering angle sensor;

drive assist means for assisting a driver in the driving operation by adding a 3-dimensional information image

containing a height of a vehicle along the predictive traveling path curve derived from the traveling path predicting means;

display means for displaying the image output from the camera and an image output the drive assist means; and

an obstacle sensor for detecting an obstacle existing in the vehicle advancing direction;

wherein the drive assist means changes a display of the 3-dimensional information image at a position on the predictive traveling path curve, which is close to a position where an obstructive object is detected by the obstacle sensor, to a display which is different from displays of the 3-dimensional image at other positions.

59 60. A vehicle drive assist device according to claim 58, wherein the drive assist means displays the 3-dimensional information image in the form of planes each having a predetermined shape which are arrayed at fixed distances along the predictive traveling path curve.

59 61. The vehicle drive assist device according to claim 58, wherein the drive assist means moves a plane of a predetermined shape representing a height of the vehicle along the predictive traveling path curve.

61 62. The vehicle drive assist device according to claim 58, wherein the drive assist means stops the plane of a

predetermined shape at a position close to a detection position where the obstructive object is detected.

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59 64. The vehicle drive assist device according to claim 60, wherein the drive assist means changes a color of the 3-dimensional information image at the position close to the detection position.

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59 65. The vehicle drive assist device according to claim 60, wherein the drive assist means displays the 3-dimensional information image in the form of a simulation image in which a self vehicle moves in the image picked up by the camera.

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66. A vehicle parking assist device for assisting a driver in a parking operation comprising:

a camera for picking up an image of an area existing in an advancing direction of a vehicle;

parking position detecting means for detecting a target parking position in which the vehicle is to be parked based on the image picked up by the camera;

steering angle calculating means for calculating a steering angle necessary for the moving of the vehicle to the target parking position detected by the parking position detecting means;

steering angle detecting means for detecting a steering angle of the vehicle; and

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parking assist means for presenting a steering operation guide to the driver on the basis of the result of comparing a steering angle detected by the steering angle detecting means with a steering angle calculated by the steering angle calculating means.

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The vehicle parking assist device according to claim 66, further comprising:

traveling path predicting means for calculating, depending on a steering angle, a predictive traveling path curve along which the vehicle will travel; and

touch judging means for judging as to whether or not the vehicle traveling along the predictive traveling path curve calculated by the traveling path predicting means will touch an obstructive object;

wherein when a steering angle calculated by the steering angle calculating means is out of a range of steering angles within which a steering wheel may be turned for steering or when the touch judging means judges that the vehicle traveling along the predictive traveling path curve, which is calculated by the traveling path predicting means depending on the steering angle, will touch the obstructive object, the parking assist means urges the driver to reverse the advancing direction of the vehicle.

68. A vehicle parking assist device for assisting a

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driver in his parking operation comprising:

a camera for picking up a image of an area existing in an advancing direction of a vehicle;

parking space recognizing means for detecting a parking space in which the vehicle is to be parked, based on the image picked up by the camera; and

parking assist means for judging as to if a parking stopper for blocking the advancing of the vehicle exists in the parking space recognized by the parking space recognizing means and for informing the driver of the result of the judgement.

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69. The vehicle parking assist device according to claim 66, further comprising voice guide means for carrying out a guide by the parking assist by voice.

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70. The vehicle parking assist device according to claim 68, wherein the voice guide means also gives the driver warning to urge the driver to watch environmental conditions around the vehicle.

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71. The vehicle parking assist device according to claim 66, further comprising display guide means for visually presenting the guide by the parking assist together with the image by the camera.

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72. A vehicle parking assist device for assisting a

driver using image information when the driver backs a vehicle into a parking space, the vehicle parking assist device comprises:

a camera for picking up an image of a backward area of the vehicle;

display means for displaying the image of the backward area picked up by the camera, the display means having a screen; and

parking assist means for assisting the driver in the parking using a display on the screen of the display means in which the guide lines prolonged from the lines defining the width of the vehicle and distance lines are overlaid on the backward area image.

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13. A vehicle parking assist device for assisting a driver using image information when the driver backs a vehicle into a parking space, the vehicle parking assist device comprises:

a camera for picking up a image of a backward area of the vehicle;

display means for displaying the image of the backward area picked up by the camera, the display means having a screen;

a steering angle sensor for detecting a steering angle of the self vehicle;

traveling path predicting means for predicting a traveling path of the self vehicle on the basis of a steering

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angle detected by the steering angle sensor and for calculating a predictive traveling path curve representing the result of the prediction;

parking position judging means for judging a parking position at which the self vehicle is to be parked; and

parking assist means for effecting a parking assist in such a way that a length of a predictive traveling path curve calculated by the traveling path predicting means is adjusted in accordance with a distance ranging to a parking position judged by the parking position judging means, and the predictive traveling path curve length adjusted is overlaid on a backward area image on the screen of the display means.

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~~73~~ A vehicle parking assist device for assisting a driver using image information when he backs a vehicle into a parking space, the vehicle parking assist device comprises:

a camera for picking up an image of a backward area of the vehicle;

display means for displaying the image of the backward area picked up by the camera, the display means having a screen;

a steering angle sensor for detecting a steering angle of the self vehicle;

traveling path predicting means for predicting a traveling path of the roof portion of the self vehicle on the basis of a steering angle detected by the steering angle sensor and for calculating a predictive traveling path curve

representing the result of the prediction; and

parking assist means for effecting a parking assist in such a way that a predictive traveling path curve of the roof portion of the vehicle, which is calculated by the traveling path predicting means, is overlaid on a backward area image on the screen of the display means.

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X A vehicle parking assist device for assisting a driver using image information when he backs a vehicle into a parking space, the vehicle parking assist device comprises:

a camera for picking up an image of a backward area of the vehicle;

display means for displaying the image of the backward area picked up by the camera, the display means having a screen;

a steering angle sensor for detecting a steering angle of the self vehicle;

traveling path predicting means for predicting a traveling path of the self vehicle on the basis of a steering angle detected by the steering angle sensor and for calculating a predictive traveling path curve representing the result of the prediction;

vehicle projection means arranged such that the vehicle projection means judges if other vehicles park in parking spaces located adjacent to a parking space under photographing by the camera, and when other vehicles park therein, the vehicle projection means calculates a projective line of the vehicle

on the ground; and

parking assist means for effecting a parking assist in such a way that a predictive traveling path curve calculated by the traveling path predicting means and a projective line of the vehicle to the ground calculated by the vehicle projection means are overlaid on a backward area image on the screen of the display means.

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~~76.~~ A vehicle parking assist device for assisting a driver using image information when he backs a vehicle into a parking space, the vehicle parking assist device comprises:

a camera for picking up a scene of a backward area of the vehicle;

display means for displaying the image of the backward area picked up by the camera, the display means having a screen;

plane model generating means for generating from the backward area image picked up by the camera a plane model containing a parking space in which a self vehicle is to be parked and the parking spaces located adjacent to the parking space, together with the self vehicle and other vehicles being parked; and

parking assist means for effecting a parking assist by displaying a plane model generated by the plane model generating means on the screen of the display means.

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~~77.~~ A vehicle parking assist device according to claim

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76, wherein the parking assist means displays an image on the screen of the display means so that the backward direction of the self vehicle is oriented downward.

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The vehicle parking assist device according to claim 76, wherein the parking assist means is capable of selectively displaying the backward area image output from the camera and the parking assist image or the plane model to be displayed overlaid on the backward area image on the screen of the display means.

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A vehicle parking assist device for assisting a driver using image information when he backs a vehicle into a parking space, the vehicle parking assist device comprises:

- a camera for picking up an image of a backward area of the vehicle;
- display means for displaying the image of the backward area picked up by the camera;
- a timer for counting a predetermined time;
- direction detecting means for detecting a change of the advancing direction of the vehicle; and
- parking assist means arranged such that when the direction detecting means detects a change of the advancing direction of the vehicle to the backward direction, the parking assist means displays the backward area image picked up by the camera on the screen of the display means to assist the driver in his parking

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operation, and when the direction detecting means detects a change of the advancing direction of the vehicle from the backward direction to the forward direction, the parking assist causes the timer to start the counting of time, and continues the parking assist based on the backward area display on the screen of the display means till a time set in the timer elapses.

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~~80~~. A vehicle parking assist device in which when a driver backs a vehicle into a parking space between adjacent vehicles of those being parked in a row, said vehicle parking assist device assists the driver in his parking operation by image-information basis guide, said vehicle parking assist device comprising:

a camera for picking up an image of a backward area of the vehicle;

a steering angle sensor for detecting a steering angle to steer the vehicle;

traveling path predicting means for predicting a traveling path of the vehicle on the basis of a steering angle detected by said steering angle sensor and for calculating a predictive traveling path curve;

timing judging means for detecting a target parking position on the basis of the image picked up by said camera and for judging a timing to reversely turn a steering wheel by an amount of turn of the steering wheel necessary to move the

vehicle to the target parking position;

parking assist means for generating a composite image of an image derived from said camera and a predictive traveling path curve predicted by said traveling path predicting means, and for adding guide information for a steering operation defined by a reverse-turn timing judged by said timing judging means to said composite image, whereby said parking assist means assists the driver in the serial parking operation; and

display means for display an image derived from said parking assist means.

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81. The vehicle parking assist device according to claim 80, wherein said parking assist means adds an oblique line as said guide information for the steering operation to a position on a predicted traveling path curve at which the steering wheel is to be reversely turned.

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82. The vehicle parking assist device according to claim 81, wherein said parking assist means assists the driver in the series parking on the basis a backward movement of the vehicle and a combination of lighting conditions of a hazard lamp and/or winker lamp.

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83. The vehicle parking assist device according to claim 82, wherein said parking assist means judges which side of the road is used for said series parking on the basis of a

combination of lighting conditions of the hazard lamp and/or winker lamp, and adds said guide information to said composite image according to the judgement result.

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84. The vehicle parking assist device according to claim 80, wherein said parking assist means generates an ideal traveling path ranging from the present position to a target parking position detected by said timing judging means, for said steering guide information.

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85. The vehicle parking assist device according to claim 80, further comprising lane monitoring means for recognizing border lines of a traffic lane and monitoring an out-of-lane of the vehicle on the basis of the border line recognition.

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86. The vehicle parking assist device according to claim 85, wherein said parking assist means judges whether or not the vehicle may back to a target parking position detected by said timing judging means within a range of steering angles within which the steering wheel may be turned, and whether or not the vehicle moves out of the traffic lane monitored by said lane monitoring means, and said parking assist means assists the driver in the series parking on the basis of the judgement results.